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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/006,876

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James F. Stevens

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38393

7590

04/21/2008

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EXAMINER

DUONG, THANH P

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

04/21/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/006,876

**Applicant(s)**

STEVENS ET AL.

**Examiner**

TOM P. DUONG

**Art Unit**

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF/ICE)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION****Continued Examination Under 37 CFR 1.114**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 16, 2007 has been entered.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 9, 11-12, 16, 18, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakagawa et al. (6,024,774). Regarding claims 9, 11-12, 16, and 18, Nakagawa discloses an apparatus for selectively reducing carbon monoxide content (Col. 2, lines 45-60 and Col. 4, lines 47-57) of a hydrogen rich gas (Col. 5, lines 10-15), comprising: an oxidation reactor (1) having a catalyst bed; a catalyst bed containing an oxidation catalyst (Col. 3, lines 45-62 and Col. 3, lines 8-20); a porous tube (4) positioned substantially within a catalyst bed for distributing raw material gas (carbon

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monoxide and water vapor) throughout the catalyst bed; and a cooling jacket (7) for maintaining the reactor operating temperature (Fig. 1); and the porous tube is an alumina tube (Col. 7, lines 60-63). Note, Nakagawa discloses an oxidation reactor (1) of a carbon monoxide reactor (Col. 3, lines 45-62) and the reactor (1) acts as a fuel processor for generating hydrogen fuel as the main product gas (Col. 4, lines 47-60).

Instant claims structurally reads on the apparatus of Nakagawa '774.

2. Claims 9, 12, 15, 16, 21, and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Clawson et al. (6,641,625). Clawson discloses apparatus for selectively reducing carbon monoxide content (Col. 14, lines 31- Col. 15, line 7) of a hydrogen rich gas (Col. 14, lines 31-35), comprising: an oxidation reactor (13) having a catalyst bed (95); a catalyst bed (95) containing an oxidation catalyst (Col. 15, lines 4-7); a porous tube (92) positioned substantially within a catalyst bed (95) for distributing raw material gas throughout the catalyst bed; and a cooling jacket (97) for maintaining the reactor operating temperature (Fig. 1). Note, Clawson discloses an oxidation reactor (13) of a carbon monoxide reactor (Col. 14, lines 31- Col. 15, line 61) and the reactor (13) acts as a fuel processor for generating hydrogen fuel (hydrogen-rich reformat).

Instant claims structurally reads on the apparatus of Clawson '625.

3. Claims 10, 13-15, 17 and 19-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakagawa et al. (6,024,774). Regarding claims 10 and 17, Nakagawa discloses the porous tube is made of ceramic materials or heat resisting

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metal (Col. 4, lines 1-5) but is silent with respect to the porous tube is made of stainless steel material. In view of Nakagawa, it would have been obvious matter of design choice to one having ordinary skill in the art to select stainless material as the material of construction for the porous tube to provide a tube with improved heat and corrosion resistance since the selection of a known material based on its suitability for its intended use supported a *prima facie* obviousness. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Regarding claims 13-14 and 19-20, Nakagawa is silent with respect to temperature claimed range. However, Nakagawa discloses the apparatus is operating at a much higher temperature range (Col. 1, lines 50-57) than the claimed invention; therefore, one of ordinary skill would have expected the apparatus of Nakagawa is capable of operating within the temperature range of the claimed invention. Regarding claims 15 and 21, Nakagawa discloses the use of a cooling circulating pipe 7 with cooling means to control the reaction temperature but is silent with respect to the type of coolant. It would have been obvious in view of Nakagawa to one having ordinary skill in the art to use any conventional coolant means such as water, steam, and other coolants to control the temperature of the reactor to obtain a high purity of hydrogen.

### ***Response to Arguments***

Applicant's arguments filed April 16, 2008 have been fully considered but they are not persuasive.

(1) Applicants argued that " In Nakagawa, "[t]he raw material gas consisting of carbon monoxide and water vapor, produces a main product gas, hydrogen and a byproduct gas, carbon dioxide." Col. 2, lines 48-50. An object of the Nakagawa invention is to remove the carbon dioxide out of the reaction system. Col. 1, lines 43-49. In contrast, "[t]he present invention utilizes a porous distribution tube to add air for carbon monoxide oxidation." Paragraph 0006. Therefore, while Nakagawa removes carbon dioxide, the present invention adds air. " Such argument lacks merits. It is submitted that Nakagawa discloses all structural features of the claimed invention; therefore, the apparatus of Nakagawa is capable of distributing an oxygen-containing stream throughout the catalyst bed. Note, "An apparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). MPEP 2114. Furthermore, the recitation of "an oxygen-containing stream" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969).

(2) Applicants also argued that "In Clawson, "[o]ptionally, air inlets (not shown) may be provided to permit reaction air to be diffused within critical areas of tile reactor 13." Col. 14, lines 42- 44. In contrast, "[t]he present invention utilizes a porous distribution tube to add air for carbon monoxide oxidation throughout the length of a catalyst bed. By distributing the air injection, hot and cold areas in the catalyst bed can be avoided, thereby improving the selectivity of the reactor to carbon monoxide oxidation." Paragraph 0006. Further, the construction and positioning of the porous tube is discussed in Paragraph 0007. In addition, the porous tube 210 is illustrated in Figure 2. The air inlets (not shown) of Clawson do not distribute

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air throughout the length of a catalyst bed like the porous tube of the present invention. The porous tube of the present invention will provide a superior distribution of air than the air inlets (not shown) of Clawson. This superior distribution of air will prevent hot spots and will maintain carbon monoxide selectivity."

Such contention is not persuasive since Clawson discloses the porous tube with porous wall and the addition of air in the porous tube of Clawson would distribute the air throughout the porous wall of the porous tube.

It is submitted that Clawson discloses all structural features of the claimed invention; therefore, the apparatus of Clawson is capable of distributing an oxygen-containing stream throughout the catalyst bed

Note, "An apparatus claims cover what a device is, not what a device does." *Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990). MPEP 2114. Furthermore, the recitation of "an oxygen-containing stream" is directed to the contents thereof during an intended operation and does not impart further structural limitation to the claimed invention. See *Ex Parte Thibault*, 164 USPQ 666, 667, (Bd. App. 1969).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOM P. DUONG whose telephone number is (571)272-2794. The examiner can normally be reached on 8:00AM - 4:30PM (IFP).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Duong  
April 17, 2008

/Glenn A Caldarola/  
Acting SPE of Art Unit 1797



